

**NINDS CDE Notice of Copyright  
Montreal Cognitive Assessment (MoCA)**

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<b>Classification:</b>	<p>Core for Stroke and Epilepsy</p> <p>Supplemental for PD</p> <p>Exploratory for HD</p>
<b>Short Description of Instrument:</b>	<p><u>Purpose</u> The MoCA screens patients who present with mild cognitive complaints and normal mini-mental state examination (MMSE) scores for mild cognitive impairment (MCI). While the MMSE is a ubiquitous cognitive screening instrument, its relative insensitivity to executive dysfunction and the focal cognitive deficits that can often been seen in stroke render it suboptimal for cerebrovascular populations. In fact, a recent study demonstrated the underestimation of cognitive deficits by the MMSE versus the MoCA in individuals with TIAs and stroke in a large population based study.</p> <p><u>Overview</u> The MoCA is a screening test of cognition with favorable psychometric properties. It screens eight domains: Visuospatial/executive, Naming, Memory, Attention, Language, Abstraction, Delayed recall, and Orientation.</p> <p><u>Time</u> The assessment takes approximately 10 minutes.</p> <p><u>Scoring</u> The total possible score is 30 points (total for each domain: Visuospatial/executive – 5, Naming – 3, Memory – None, Attention – 6, Language – 3, Abstraction – 2, Delayed recall – 5, Orientation – 6). A normal score is greater than or equal to 26 points. The suggested cut-off score [MCI or Alzheimer's disease (AD)] is any score less than 26. One point is added for an individual who has 12 years or fewer of formal education; however the total possible score remains the same. Note that additional studies of optimizing cut-points in different populations are currently underway.</p> <p><u>Psychometric Properties</u> There are strong validation studies emerging across patient populations (e.g., cerebrovascular, MCI/AD, Parkinson's disease).</p> <p><u>Other Important Notes</u> Available in various languages (currently 31 total).</p> <p>Raters using this at admission or discharge should develop a standard methodology and scoring instructions for use in hospital setting.</p>

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<b>References:</b>	<p>Nasreddine et al. The Montreal Cognitive Assessment, MoCA: a brief screening tool for mild cognitive impairment. <i>J Am Geriatr Soc</i> 2005; 53:695-699</p> <p><b>Stroke:</b></p> <p>Luis C., Keegan A, &amp; Mullan, M (2009). Cross validation of the Montreal cognitive assessment in community dwelling older adults residing in the southeastern US. <i>International Journal of Geriatric Psychiatry</i>, 24: 197-201.</p> <p>Nasreddine ZS, Phillips NA, Bedirian V, Charbonneau S, Whitehead V, Collin I, Cummings JL, Chertkow H (2005). The Montreal Cognitive Assessment, MoCA: a brief screening tool for mild cognitive impairment. <i>J Am Geriatr Soc</i>, 53(4): 695-699.</p> <p>Naugle, R., &amp; Kawczak, K. (1989). Limitations of the Mini-Mental State Examination. <i>Cleveland Clinic Journal of Medicine</i>, 56, 277-281.</p> <p>Pendlebury ST, Cuthbertson FC, Welch SJ, Mehta Z, Rothwell PM. (2010). Underestimation of cognitive impairment by mini-mental state examination versus the montreal cognitive assessment in patients with transient ischemic attack and stroke: a population-based study. <i>Stroke</i>. 2010 Jun; 41(6):1290-3. Epub 2010 Apr 8.</p> <p>Popovic, IM, Seric, V, &amp; Demarin, V. (2007). MCI in symptomatic and asymptomatic cerebrovascular disease. <i>J Neurol Sci</i>, 257, 185-193.</p> <p>Zadikoff, C., Fox, SH, Tang-Wai, DF, Thomsen, T., de Bie, RM, Wadia, P, Miyasaki, J., Duff-Canning, S., Lang, AE, &amp; Marras, C. (2008). A comparison of the MMSE to the MoCA in identifying cognitive deficits in PD. <i>Mov Disord</i>, 23, 297-299.</p> <p><b>HD:</b></p> <p>Mickes L, Jacobson M, Peavy G, Eixted JT, Lessig S, Goldstein JL, Corey-Bloom J. A comparison of two brief screening measures of cognitive impairment in Huntington's disease. <i>Movement Disorders</i> 2010; 25:2229-22233.</p> <p>Videnovic A, Bernard B, Fan W, Jaglin J, Leurgans S, Shannon KM. The Montreal Cognitive Assessment as a screening tool for cognitive dysfunction in Huntington's disease. <i>Movement Disorders</i> 2010; 25:401-404.</p>
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